

NEW SPECIES AND NEW RECORDS OF ROTIFERA (ASCHELMINTHES) FROM AUSTRALIAN WATERS

by RUSSELL J. SHIEL* & WALTER KOSTE†

Summary

Shiel, R. J. & Koste, W. (1985) New species and new records of Rotifera (Aschelminthes) from Australian waters. *Trans. R. Soc. S. Aust.* 109(1), 1-15, 28 June, 1985.

One hundred and sixty-seven taxa are added to the Rotifera recorded from Australian waters, bringing the total to over 600. New taxa described and figured are: *Lepadella patella* var. nov., *Tecone testumaniensis* sp. nov., *T. unguifata* var. nov., *Asplanchna brightwelli asymmetrica* ssp. nov., and *Testudinella husseyi* sp. nov. In addition, *Hexarthra oxyuris* (Sernov) is redescribed and figured and its synonymy discussed.

KEY WORDS: Rotifera, new species, new records, Australia.

Introduction

Although knowledge of the systematics and ecology of Australian Rotifera has improved considerably in recent years, it remains fragmentary. Preliminary taxonomic works (Shiel & Koste 1979, Koste & Shiel 1980a, b) stemmed from a study of the zooplankton of the Murray-Darling basin, from samples collected along the Magela Creek, Northern Territory (Koste 1981, Koste & Shiel 1983, Iait *et al.* 1984) and in southwest Western Australia (Brock & Shiel 1983, Koste *et al.* 1983). The rotifer fauna of most of Australia remains unstudied. While this can be attributed in part to a shortage of rotiferologists² rather than of rotifers (cf. Dumont 1983), there are undoubtedly more collectors of zooplankton in Australia than the rotifer records indicate. Systematic difficulties appear to be a major obstacle.

We noted earlier (Koste & Shiel 1980a) that major systematic works deal with the northern hemispheric fauna; there is limited information on the Rotifera of the southern continents. Indeed, a global revision of the Class is desirable, particularly since the recognition of ecotypic variation in response to habitat variability. In the brachionids, for example, extensive intraspecific variation in size, lorica morphology or spine length has been demonstrated in response to habitat temperature, pH, salinity or predators, (e.g. Gilbert 1967, Green 1977, Gilbert & Stemberger 1984). This raises the difficulty of specific determination when the extent of intra-specific variability is not known for most rotifer genera, and accounts in part for the proliferation of "species" based on very limited material.

To help overcome taxonomic problems we commenced a comprehensive illustrated key to the

planktonic monogonont Rotifera recorded from Australian waters. In view of complex rotifer assemblages, particularly in tropical Australia, we have found it necessary to extend the key to include facultatively or occasionally planktonic taxa, including Bdelloidea. The first diagnostic keys have been prepared (Koste & Shiel *in press* a,b), but an entire revision may take several years. Here we update the species list and describe new taxa from our (and other) collections.

In the first checklist, Shiel & Koste (1979) recorded 331 taxa, in 73 genera. A further 106 taxa were listed by Koste & Shiel (1980a). One of these, cited as *Filinia hoffmanni* (*sic*) (= *F. hoffmanni* Koste, 1980), was an error; it is a European species. To the 436 known taxa we add here a further 167, collated from the literature since 1980, from material made available to us by others, and from our collections. An important contribution was made by Berzins (1982), who provided a list of rotifers identified from collections made in Australian waters over a period of 30 years. Many of these are first records for the continent, and a number of species are new. However several species described as new appear to be synonyms, artefacts of preservation or misidentifications. These are discussed in the text. Infrasubspecific taxa hitherto described as f. or var. are described in relation to the nominate ssp. simply to document variability, and are not named. More detailed ecological data and/or material will facilitate a later revision.

The format follows that of Koste & Shiel (1980b). All records are listed systematically following Donner (1965) for the Bdelloidea and Koste (1978b) for the Monogononta. Locality (or nearest named feature) and date of collection are given. Ranges of water quality are given where available. Published records are cited by author, unpublished records by collector. Only new taxa are figured. Types and paratypes are lodged with the South Australian Museum (SAM).

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SYSTEMATICS

Order BDELLOIDEA

Family Habrotrochidae

Habrotrocha bidens (Gosse), 1851

Loc: Bombala, N.S.W., in tree stump mould; 28.xii.1949, 8.i.1950.

Lit: Berzins (1982).

H. cucullata Murray, 1911

Loc: Bombala, N.S.W., creek moss; 8.i.1950.

Lit: Berzins (1982).

H. fusca (Bryce), 1894

Loc: Bombala, N.S.W., tree stump mould; 28.xii.1949.

Lit: Berzins (1982).

H. lignula Bryce, 1913

Loc: Bombala, N.S.W., tree stump mould; 28.xii.1949.

Lit: Berzins (1982).

H. microcephala (Murray), 1906

Loc: Melbourne, Vic.; moss and lichens; 1.ii.1951.

Lit: Berzins (1982). = *H. constricta* according to Donner (1965). The latter is known from N.S.W. (Murray 1911).

H. tranquilla Milne, 1916

Loc: Bombala, N.S.W., tree stump mould; 28.xii.1949.

Lit: Berzins (1982).

H. triplus (Murray), 1907

Loc: Yarra R., Ivanhoe, Vic., in terrestrial lichens; 1.i.1951.

Lit: Berzins (1982).

Family Philodinidae Bryce, 1910

Embata hamata (Murray), 1906

Loc: Yarra, R., McMahon's Creek, Vic.; 19.iii.1976.

Lit: Berzins (1982).

Dissotrocha hertzogi Hauer 1939

Loc: Hunter, R., near Gundy, N.S.W.; 11.xi.1953.

Lit: Berzins (1982).

Pleuretra brycei (Weber), 1898

Loc: Geraldton, W.A., moss/humus; undated, (?vi.1953).

Lit: Berzins (1982).

Macrotrachela aculeata (Milne), 1886

Loc: Bombala, N.S.W., tree stump mould; 28.xii.1949.

Lit: Berzins (1982).

M. angusta (Bryce), 1894

Loc: Bombala, N.S.W., tree stump mould; 28.xii.1949.

Lit: Berzins (1982).

M. concinna (Bryce), 1912

Loc: Geraldton, W.A., moss/humus; undated (?vi.1953).

Lit: Berzins (1982).

M. gunningi (Murray), 1911

Loc: Melbourne, Vic., moss/lichens; 1.ii.1951.

Lit: Berzins (1982).

M. nana (Bryce), 1912

Loc: Yarra R., Ivanhoe, Vic., moss/lichens; 1.i.1951, 1.ii.1951.

Lit: Berzins (1982).

M. sinithi Milne, 1916

Loc: Bombala, N.S.W., moss; 8.i.1950.

Lit: Berzins (1982).

M. speciosa (Murray), 1907

Loc: Melbourne, Vic., moss/lichens; 1.ii.1951.

Lit: Berzins (1982).

Mniobia circinata (Murray), 1908

Loc: Melbourne, Vic., moss/lichens; 1.ii.1951.

Lit: Berzins (1982).

M. conarus Berzins, 1982

Loc: Heyington, Melbourne, Vic., moss/lichens; 14.i.1951.

Lit: Berzins (1982).

M. lineata Rahm, 1932

Loc: Heyington, and Yarra R., Ivanhoe, Vic., moss; 14.i.1951, 14.iii.1976.

Lit: Berzins (1982).

M. magna (Plate), 1889

Loc: Bombala, N.S.W., moss/lichens; 8.i.1950.

Lit: Berzins (1982).

M. ocyptetes Berzins, 1982

Loc: Melbourne, Vic., moss/lichens; 1.ii.1951.

Lit: Berzins (1982).

M. scarlatina (Ehrenberg), 1853

Loc: Melbourne, Vic., moss/lichens; 1.ii.1951.

Lit: Berzins (1982).

Family Adenitidae Bryce, 1910

Adineta cuneata Milne, 1916

Loc: Bombala, N.S.W., tree stump mould; 26.xii.1949.

Lit: Berzins (1982).

Order PLOIMIDA Hudson & Gosse, 1886

Family Epiphanidae Bartos, 1959

Epiphanes macrourus (Barrois & Daday), 1894

Loc: Lake Grace-Kalgoorlie-Norseman area of southwest W.A.; viii.1978; x.1981.

Lit: Geddes *et al.* (1981), Koste *et al.* (1983).

Family Brachionidae Wesenberg-Lund, 1889

Brachionus caudatus personatus Ahlstrom, 1940
Loc: Winnmurra Billabong, Magela Ck, near Jabiluka, N.T.; 15.iv.1980.
pH 5.44, 28.5°C, 6.2 mg l⁻¹ O₂, 23 µS cm⁻¹.
Lit: Koste (1981).

B. falcatus f. *reductus* Koste & Shiel, 1983
Loc: Winnmurra Billabong, near Jabiluka, Magela Ck, N.T.; 4.xii.1980.
Lit: Koste & Shiel (1983).

B. kostei Shiel, 1983
Loc: Sheepwash Billabong, Yea, Vic.; 19.i.1982.
pH 7.0-7.7, 24°C, sat. O₂, < 50-200 µS cm⁻¹, soft magnesium bicarbonate waters, high transparency (<1 NTU).
Lit: Shiel (1983).

B. pinnicentralis Koste & Shiel, 1983
Loc: Cue, southwest W.A.; viii.1978.
Lit: Geddes *et al.* (1981).

B. quadridentatus aenocystogaster (Schinarda), 1859
Loc: L. Bullenmerri, Vic.; 22.ix.1983.
Coll: I. J. Powling.

B. quadridentatus rhenanus (Lauterborn), 1893
Loc: L. Bullenmerri, Vic.; 22.ix.1983
Coll: I. J. Powling.

B. quadridentatus minor Koste & Shiel, 1983
Loc: Billabongs, Magela Ck, N.T.; 13.vi.1979; Lake Grace area, southwest W.A.; vi.1981.
Lit: Koste *et al.* (1983).

Keratella quadrata dispersa (Carlin), 1943
Loc: Yarra R. near Ivanhoe, Vic.; 14.iii.1976.
Lit: Berzins (1982).

Family Euchlanidae Bartos, 1959

E. pyriformis Gosse, 1851
Loc: Moorabool R., Ballan, Vic.; 9.vii.1954.
Lit: Berzins (1982).

Diplochelomis elegans (Wierzejski), 1893
Loc: L. Catani, Mt Buffalo, Vic. (- *D. paludosa* Haner, 1936); 25.ii.1955.
Lit: Berzins (1982).

D. propatula macroductyla (Haner), 1965
Loc: Magela Ck, N.T.; 15.iv.1980; Yarra R. east of Warburton, Vic.; 19.iii.1976.
Lit: Koste (1981), Berzins (1982).

Munifrelimur endactylotum (Gosse), 1886
Loc: Magela Ck., N.L.; 15.iv.1980; Lake Grace-Norseman area, southwest W.A.; viii.1978, x.1981.
Lit: Koste (1981), Koste *et al.* (1983).

Family Mytilinidae Bartos, 1959

Mytilina ovanthophora Haner, 1938
Loc: Solomon Dam, Lake Moondarra, Qld.
Undated.
Coll: P. Hawkins, T. Orr.

M. bisulcata (Eucks), 1912
Loc: Yarra R., Dight's Falls, Vic.; 12.iii.1976.
Lit: Berzins (1982).

M. ventralis f. *longidactyla* Wulfert, 1965
Loc: Magela Ck near Jabiluka, N.T.; 15.iv.1980.
Lit: Koste (1981).

Lophocharis curvata Berzins, 1982
Loc: King Parrot Ck, Kinglake, Vic.; 18.x.1953.
Lit: Berzins (1982). Inadequately figured and described. May be a formalin artefact.

L. oxysternum (Gosse), 1851
Loc: Jackson's Creek, Moorabool R., Vic.; 6.iii.1961, 9.vii.1954.
Lit: Berzins (1982).

Family Trichotriidae Bartos, 1959

Trichotria tetracis var. *similis* (Stentoos), 1898
Loc: Magela Ck near Jabiluka, N.T.; 15.iv.1980.
Lit: Koste (1981).

Macrochuetus altamirai (Arevalo), 1918
Loc: Riddell's Ck, Sunbury, Vic.; 06.iii.1961.
Lit: Berzins (1982) (syn: *M. australiensis* Berzins).

M. danieeli Koste & Shiel, 1983
Loc: Buffalo Billabong, Magela Ck, N.T.; 10.xi.1980.
pH 5.38, 30.9°C, O₂ 4.15 ppm, 29 µS cm⁻¹.
Lit: Koste & Shiel (1983).

Family Colurellidae Bartos, 1959

Colurella columnaris (Ehrenberg), 1830
Loc: Moorabool R., Yarra R., Mt Donna Buang, Vic.; 9.vii.1954, 25.ix.1962, 12.iii.1976.
Lit: Berzins (1982).

C. tessellata (Glaseott), 1983
Loc: Coghill's Ck, Vic.; 11.vi.1953.
Lit: Berzins (1982).

C. bicuspidata uncinata (Ehrenberg), 1832
Loc: widespread, Victoria, perennial.
Lit: Berzins (1982).

Lepadella acuminata sexcostata (Bartos), 1955
Loc: Coghill's Ck; L. Catani, Mt Buffalo, Vic.; 11.vi.1953, 25.ii.1955.
Lit: Berzins (1982).

L. acuminata septemcostata Berzins, 1982
Loc: L. Catani, Mt Buffalo, Vic.; 25.ii.1955.
Lit: Berzins (1982).

L. amphitropis Harring, 1916

Loc: Barker's Ck, Castlemaine; Yarra R., Vic.; 21.iv.1953, 19.iii.1976.
Lit: Berzins (1982).

L. amphitropis victoriensis Berzins, 1982

Loc: Middle Tarwin R., Vic.; 01.v.1953.
Lit: Berzins (1982).

L. apsida Harring, 1916

Loc: L. Euramoo, Qld; viii.1978. Magela Ck, N.T.; 15.iv.1980.
Lit: Green (1981), Koste (1981).

L. buangensis Berzins, 1982

Loc: Mt Donna Buang, Vic.; 25.ix.1962.
Lit: Berzins (1982). The species is poorly figured.
The resemblance to *L. patella* (Müller) was noted by Berzins (1982 p. 11, Fig. 5) and we consider *L. buangensis* a synonym.

L. chorea Berzins, 1982

Loc: Hunter R. near Gundy, N.S.W. (?11.xi.1953).
Lit: Berzins (1982). Also very poorly figured, and possibly a formalin artefact.

L. decora Berzins, 1982

Loc: Loddon R., Vic.; 10.vi.1953.
Lit: Berzins (1982).

L. latusinus f. *mucronata* Koste, 1981

Loc: Magela Ck near Jabiluka, N.T.; 15.iv.1980.
Lit: Koste (1981).

L. lindaui Koste, 1981

Loc: Winmurra Billabong, Magela Ck, N.T.; 15.iv.1980.
pH 5.44, 28.5°C, 6.2 mg λ⁻¹ O₂, 23 µS cm⁻¹.
Lit: Koste (1981).

L. minorui Koste, 1981

Loc: Leichhardt Billabong, Magela Ck, N.T.; 15.iv.1980.
pH 5.55, 30.1°C, 5.53 mg λ⁻¹ O₂, 58 µS cm⁻¹.
Lit: Koste (1981).

L. oblonga (Ehrenberg), 1834

Loc: Sheepwash billabong, Yea, Vic.; 17.iv.1976.
Coll: R. J. Shiel.

L. ovalis n.f. Koste, 1981

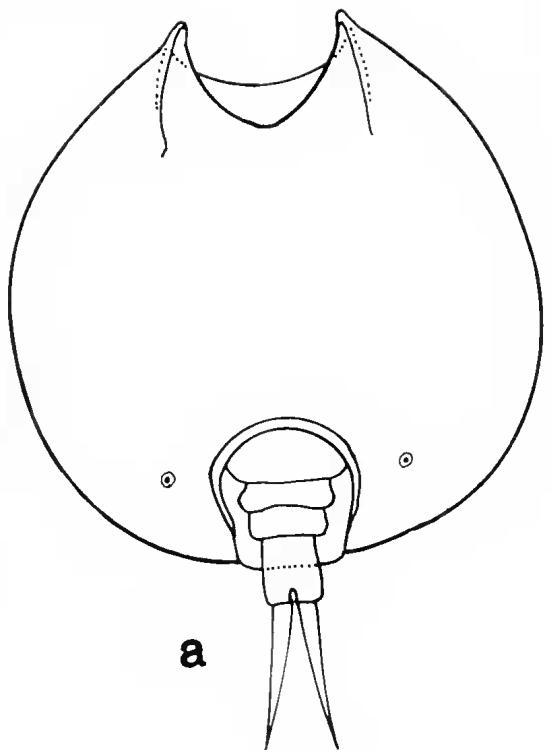
Loc: Nankeen Billabong, Magela Ck, N.T.; 15.iv.1980.
pH 5.47, 29.9°C, 5.45 mg λ⁻¹ O₂, 44 µS cm⁻¹.
Lit: Koste (1981).

Lepadella patella patella (Müller), 1786 n. var.

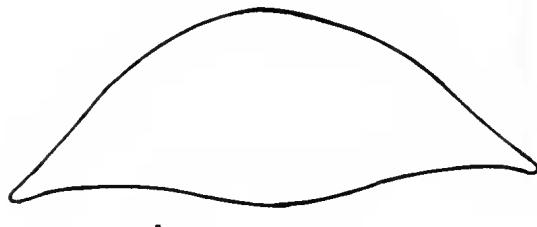
FIG. 1a, b

Loc: Buffalo billabong, Magela Ck, N.T.; 8.xii.1980.
Coll: R. D. Tait.
SAM V3941

In this sample were four *Lepadella* with a circular lorica which resembled *L. patella* (Müller) described



a



b

Fig. 1. *Lepadella patella* (O. F. Müller) var. nov. a, ventral, b, transverse section.

by Wulfert (1960) from a sphagnum pool in middle Germany (see also Koste (1978b); Pl. 59, Fig. 2K). Whereas the latter form has a circular foot-opening, the N.T. form has a semicircular opening with a quadrangular termination at the end of the ventral plate. The tropical form is markedly larger: Wulfert (1960) states that *L. patella* has a lorica length of 70 µm, lorica width 62 µm and toes 21 µm, whereas the Buffalo Billabong form is 98 µm long, 92 µm wide, with toes of 24 µm. Both taxa live in acid biotopes. In the absence of additional information we document and figure the variant form as an ecotype, and await more intensive treatment at a later date.

- L. patella biloba* (Hauer), 1958
 Loc: Yarnup Swamp, near L. Unjcup, southwest W.A.; 8.x.1981,
 17.0°C , $1600 \mu\text{S cm}^{-1}$.
 Lit: Koste et al. (1983).
- L. quadricarinata* (Stentroos), 1898
 Loc: Coghill's Ck, Vic.; 11.vi.1953.
 Lit: Berzins (1982).
- L. quadricarinata sexcarinata* Klement, 1959
 Loc: Coghill's Ck, Vic.; 11.vi.1953.
 Lit: Berzins (1982).
- L. rotenburgi* (Lucks), 1912
 Loc: Riddel's Ck near Sunbury, Vic.; A.; 6.iii.1961.
 Lit: Berzins (1982).
- L. triba* Myers, 1934
 Loc: Strathpine pool, Brisbane, Qld; 21.iv.1950.
 Lit: Berzins (1982).
- Heterolepadella heterodactyla* Fadew, 1925
 Loc: Magela Ck near Jabiluka, N.T.; 15.iv.1980.
 Lit: Koste (1981).
- Family Lecanidae Bartos, 1959
- L. (Hemimonostyla) inopinata* f. *sympoda* (Hauer), 1929
 Loc: Cairns, N.Qld.
 Coll: R. Hamond (Det. *L. sympoda* by C. H. Fernando).
- L. bifurca entome* Berzins, 1982
 Loc: Creswick Ck, Clunes, Vic.; 11.iv.1953.
 Lit: Berzins (1982).
- L. bulla goniata* (Harring & Myers), 1926
 Loc: Jackson's Ck, Sunbury, 06.iii.61; Moorabool R., Ballan, Vic.; 9.vii.1954.
 Lit: Berzins (1982).
- L. copeis* (Harring & Myers),
 Loc: Yarra R., near Yarraglen, Vic.; 18.iii.1976.
 Lit: Berzins (1982).
- L. decipiens* (Murray), 1913
 Loc: Cairns, Qld.
 Coll: P. A. Tyler (Det. C. H. Fernando).
- L. elachis* Harring & Myers, 1926
 Loc: Mine Valley Billabong near Jabiluka, N.T.; 13.vi.1979.
 Coll: R. J. Shiel.
- L. lamellata thalera* (Harring & Myers), 1926
 Loc: Forestdale Lagoon near Perth, W.A.
 Coll: J. van Alphen.
- L. lunaris australis* Berzins, 1982
 Loc: L. Catani, Mt Buffalo, Vic.; 25.ii.1955.
 Lit: Berzins (1982). Doubtful, poorly figured.
 ?Formalin artefact.
- L. lunaris constricta* (Murray), 1913
 Loc: R. Murray, Blanchetown, S.A. 7.v.1982.
 Coll: R. J. Shiel.
- L. lunaris perplexa* Ahlstrom, 1938
 Loc: Yarra R., Yarra Glen, Warburton, Vic. 14, 18, 19.iii.1976.
 Lit: Berzins (1982).
- L. monostyla* (Daday), 1897
 Loc: L. Euramoo, Qld; viii.1978.
 Lit: Green (1981).
- L. obtusa* (Murray), 1913
 Loc: L. Euramoo, Qld, viii.1978; Coghill's Ck, Vic.; 11.vi.1953.
 Lit: Green (1981), Berzins (1982).
- L. opias* (Harring & Myers), 1926
 Loc: Yarra R., McMahon's Ck, Vic.; 19.iii.1976.
 Lit: Berzins (1982).
- L. perpusilla* (Hauer), 1929
 Loc: Yarra R., near Ivanhoe, Vic.; 14.iii.1976.
 Lit: Berzins (1982).
- L. pyriformis* (Daday), 1905
 Loc: Magela Ck near Jabiluka, N.T., 15.iv.1980; L. Euramoo, Bromfield Swamp, Atherton Tableland, Qld, viii.1978; southern Vic., 11.iv.1955, 11.vi.1953, 6.ni.1961.
 Lit: Koste (1981), Green (1981), Berzins (1982).
- L. scutata* (Harring & Myers), 1926
 Loc: Magela Ck floodplain, N.T., 15.iv.1980.
 Lit: Koste (1981).
- L. tethis* (Harring & Myers), 1926
 Loc: L. Euramoo, Atherton Tableland, Qld; viii.1978.
 Lit: Green (1981).
- L. (M.) unguitata* Fadew, 1925 var. nov.
 FIG. 2a, b
 Loc: Billabong of Coleman R., Cape York, Qld.
 26.vi.1983.
 Coll: B. V. Timms.
 SAM V3944
- A single individual of this species was identified only from a figure given by Hauer (1938, Fig. 7la, b) (see also Koste 1978, Fig. 80, 6a-c). The species is rare, but seems to be cosmopolitan. Wulfert (1966) described variable ecotypes from the Sokoto R., W. Africa, and from Indian waters. The characteristic anterior projections of the lorica were not visible or were absent on the Cape York variant.
- Measurements:* Ventral lorica length $104 \mu\text{m}$, ventral lorica width $83 \mu\text{m}$, dorsal lorica length $94 \mu\text{m}$, dorsal lorica width $72 \mu\text{m}$, toes incl. claws $40 \mu\text{m}$, claws $12 \mu\text{m}$.

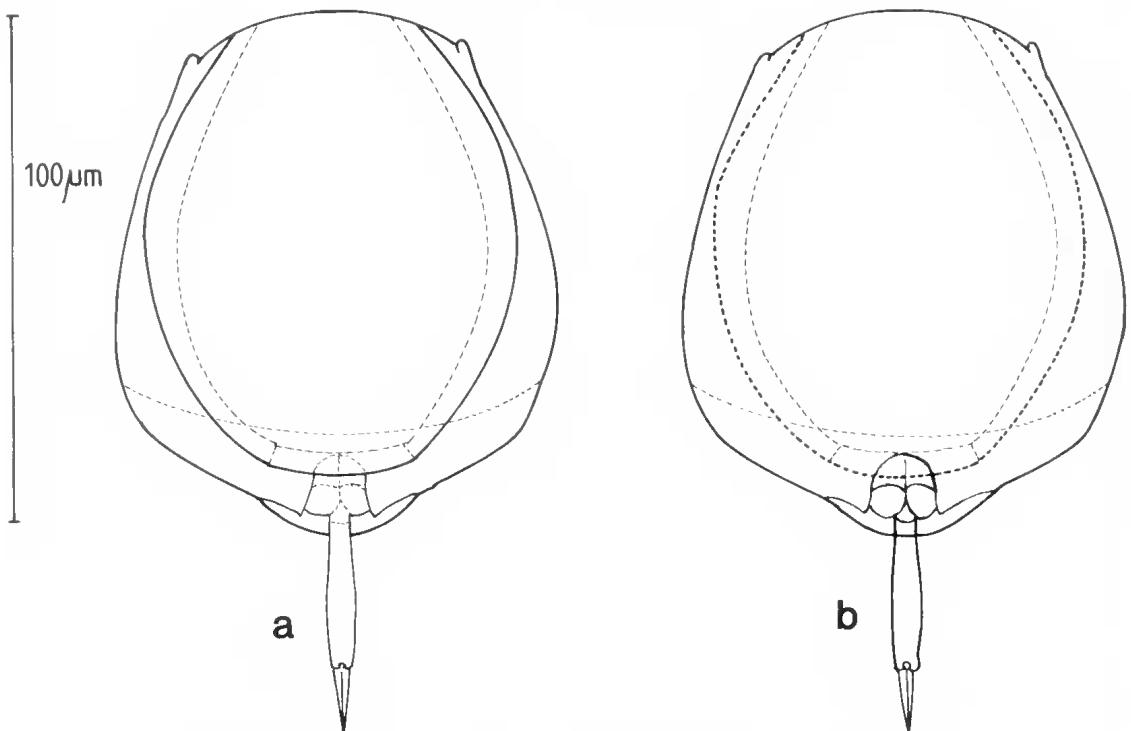


Fig. 2. *Lecane (Monostyla) unguitata* Fadeew, var. nov. a, ventral; b, dorsal.

Lecane (s. str.) aculeata var. *arcula* (Harring), 1914
Loc: Eildon Res., Bonnie Doon, Vic.; 10.xii.1962.
Lit: Berzins (1982). (=*L. arcula* (Harring)).

Lecane aspasia Myers,
Loc: L. Catani, Mt Buffalo, Vic.; 25.ii.1955.
Lit: Berzins (1982).

L. boorali Koste & Shiel, 1983
Loc: Meekatharra, W.A.; 20.viii.1978.
Lit: Koste et al. (1983).

L. clara (Bryce), 1892
Loc: Moorabool R., Ballan, Vic.; 9.vii.1954.
Lit: Berzins (1982).

L. curvicornis nitida (Murray), 1913
Loc: Magela Creek floodplain near Jabiluka, N.T.;
15.iv.1980.
Lit: Koste (1981).

L. formosa Harring & Myers, 1926
Loc: Hunter R. near Gundy, N.S.W.; 11.xi.1953.
Lit: Berzins (1982).

L. hastata (Murray), 1913
Loc: Lake Grace-Meekatharra area, southwest
W.A.; xi.1981.
Lit: Koste et al. (1983).

L. inermis (Bryce), 1892
Loc: Creswick Ck, Moorabool R., Serpentine Ck,
Vic.; 11.iv.1953, 9.vii.1954, 22.iv.1953.
Lit: Berzins (1982).

L. levistyla (Olofsson), 1917
Loc: Magela Ck floodplain near Jabiluka, N.T.;
15.iv.1980.
Lit: Koste (1981).

L. mira (Murray), 1913
Loc: Strathpine pool, Brisbane; 21.iv.1950.
Lit: Berzins (1982).

L. mylacriscis Harring & Myers, 1926
Loc: Creswick Ck, Clunes, Vic.; 11.iv.1953.
Lit: Berzins (1982).

L. ploenensis (Voigt), 1902
Loc: Dunwich, Qld; 03.x.1959.
Lit: Russell (1961). (=*L. signifera* var. *ploenensis*
(Voigt) after Wiszniewski (1954)).

L. pusilla Harring, 1914
Loc: Bromfield Swamp, Qld; viii.1978., Sunbury,
Vic.; 6.iii.1961.
Lit: Green (1981), Berzins (1982).

L. pyrrha Harring & Myers, 1926
Loc: Dam, Beaufort, Vic.; 04.xi.1953.
Lit: Berzins (1982).

L. rhytida Harring & Myers, 1926

Loc: Yarra R., McMahon's Ck, Vic.; 19.iii.1976.
Lit: Berzins (1982).

L. stichea f. *intrasinuata* (Olofsson), 1917

Loc: Wimurra billabong, Magela Ck, N.T.;
15.04.1980.
Coll: R. D. Tait.

L. subtilis Harring & Myers, 1926

Loc: Wimurra billabong, Magela Ck, N.T.;
15.iv.1980.
Coll: R. D. Tait.

Lecane tasmaniensis sp. nov.

FIG. 3 a,b

Material: 11 contracted females, sample No. 1120,
in formalin.

Holotype: loricate female, sample No. 1120, Coll:
22.iv.1984, R. J. Shiel, SAM V3942.

Paratypes: SAM V3943.

Type locality: Roadside pool, button grass plain
near turnoff to McAuliffe's Weir on Lake St Clair
road, Tasmania (42°11'S/142°56'E).

Description: Lorica outline (Fig. 3a) elongate, oval;
anterior dorsal margin straight; triangular cusps or
projections at the external angles extend past ventral
margin; dorsal plate unmarked, wider than ventral
plate; ventral plate with distinct transverse ridge
across first toe segment from which parallel lines
run towards the anterior margin (Fig. 3a); posterior
segment rounded caudally; coxal plates medium,
rounded; first foot joint rectangular, distinct;
second foot joint square; toes less than half body

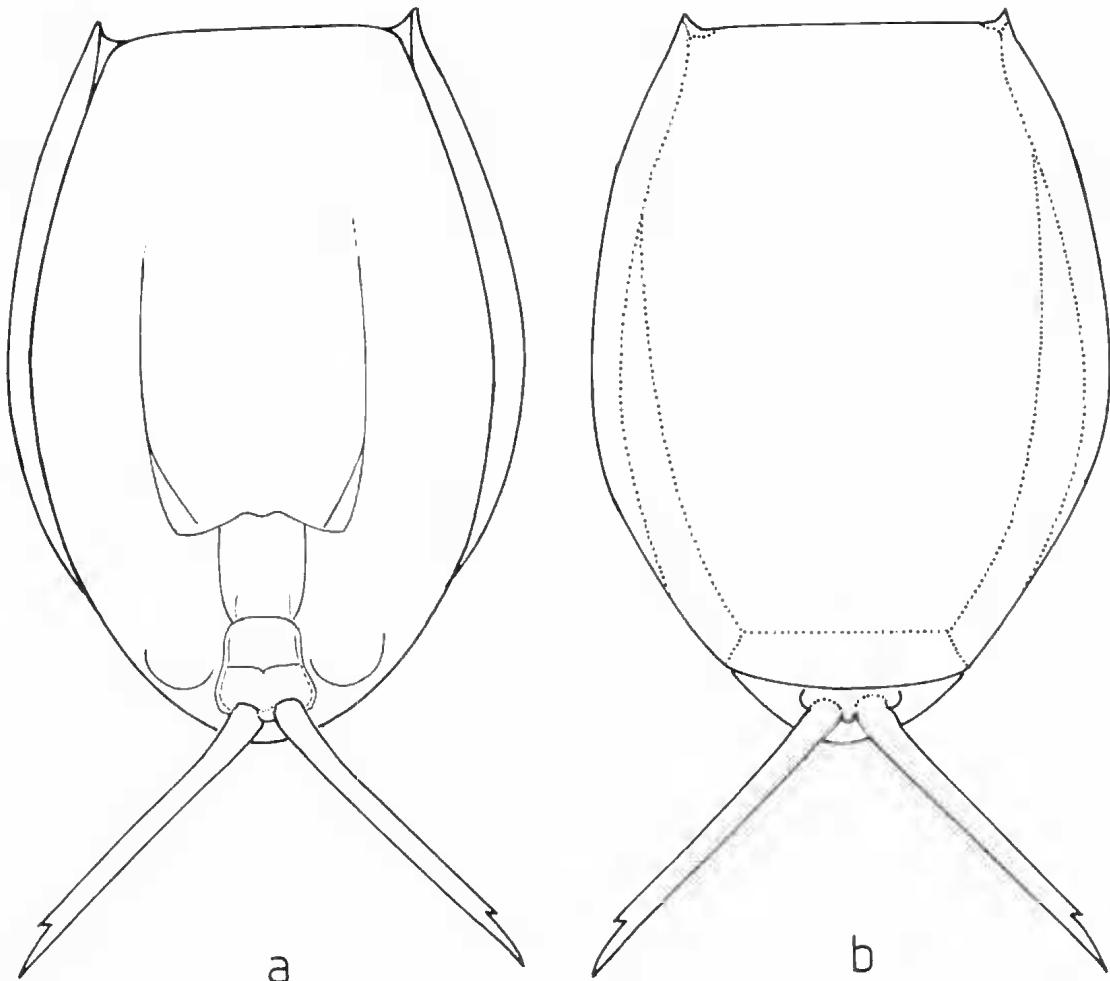


Fig. 3. *Lecane tasmaniensis* sp. nov. a, ventral, b, dorsal.

length, parallel-sided ending in short claws with basal spicules.

Measurements (μm): Total length 155-168; dorsal plate length -115, width -86; ventral plate length -126, width -79; anterior points -58; length of toes incl. claw -61; claw 10-12.

Discussion: In habit, the new species resembles *L. acronycta* Harring & Myers, 1926 and *L. curvicornis* (Murray), 1913; however the measurements of these taxa, in the same sequence as given above are: *L. acronycta* -290; 111-162, -136; 125-182, 95-113; -80; -102; -12 and *L. curvicornis* -280; 110-120, 95-112; 130-145, 105-116; -63; -79; 8-13.

L. tasmaniensis is markedly smaller in most respects, and is further characterized by the distinctly visible first toe segment under a transvers ridge, with nearly quadrangular lines above it (Fig.3 a).

L. tudicola Harring & Myers, 1926

Loc: Dam, Beaufort, Vic.; 4.xi.1953.
Lit: Berzins (1982).

L. venusta Harring & Myers, 1926

Loc: Coghill's Ck., Vic.; 11.vi.1953.
Lit: Berzins (1982).

Family Proalidae Bartos, 1959

Bryceella voigtii Rodewald, 1934

Loc: Bombala, N.S.W., moss and tree stump mould; 8.i.1950.
Lit: Berzins (1982).

Proales doliaris (Rousselet), 1895

Loc: Riddell's Ck, near Sunbury, Vic.; 6.iii.1961.
Lit: Berzins (1982).

Family Lindiidae Remane, 1933

Lindia annecta Harring & Myers, 1922

Loc: Mt Buffalo, Vic.; 10.xii.1962.
Lit: Berzins (1982).

L. truncata (Jennings), 1894

Loc: Yarnup Swamp, near L. Unicup, southwest W.A.; 8.x.1981.
Lit: Koste et al. (1983).

Family Notommatidae Remane, 1933

Monommata maculata Harring & Myers, 1924

Loc: Magela Ck, N.T., 14.iv.1980; L. Grace Norseman area, southwest W.A.; ix.1981; dam near Chillagoe, N. Qld, 12.vii.1983.
Lit: Koste (1981), Koste et al. (1983), Qld material coll. B. V. Timms.

Dorystoia caudata (Bilfinger), 1894

Loc: Yarnup Swamp, southwest W.A.; 8.x.1981.
Lit: Koste et al. (1983).

Itura viridis (Stenoos), 1898

Loc: Reservoir, Trentham, Vic.; 5.xii.1984.
Coll: I. J. Powling.

Eosphora anthadis Harring & Myers, 1922

Loc: near L. Logue, Eneabba Rd, southwest W.A.; 30.ix.1981.
Lit: Koste et al. (1983).

E. thoa Harring & Myers, 1924

Loc: Forestdale Lagoon, southwest W.A.
Coll: J. van Alphen.

E. cf. thoides Wulfert, 1935

Loc: Buffalo Billabong, Magela Creek near Jabiluka, N.T.; 8.xii.1980.
Lit: Koste & Shiel (1983).

Resticula gelida Harring & Myers, 1922

Loc: Yarnup Swamp, southwest W.A.; 8.x.1981.
Lit: Koste et al. (1983).

Notommatia cf. triangulata (Kirkman), 1906

Loc: Magela Creek floodplain near Jabiluka, N.T.; 15.iv.1980.
Lit: Koste (1981).

Cephalodella apocolea Myers, 1924

Loc: Magela Ck floodplain near Jabiluka, N.T.; 15.iv.1980.
Lit: Koste (1981).

C. auriculata (Muller), 1773

Loc: Creswick Ck, Tarwin R., Vic.; iv, v.1953.
Lit: Berzins (1982).

C. euderbyi Wulfert, 1940

Loc: Serpentine Ck, Bears Lagoon, Vic.; 22.iv.1953.
Lit: Berzins (1982).

C. exigua (Gosse), 1886

Loc: Clunes, Gippsland, Mt Buffalo, Vic.; iv, v.1953, xii.1962.
Lit: Berzins (1982).

Lit: Berzins (1982).

C. gracilis (Ehrenberg), 1832

Loc: widespread, Vic.; prob. perennial.
Lit: Berzins (1982).

C. hoodi (Gosse), 1896

Loc: Tarwin R., Vic.; 1, 7.v.1953.

Lit: Berzins (1982). Berzins also recorded *C. remanei* Wiszniewski from Castlemaine, Vic. (= *C. hoodi*). For synonymy see Koste 1978b p. 351).

C. intuta Myers, 1924

Loc: Magela Ck floodplain near Jabiluka, N.T.; 15.iv.1980.
Lit: Koste (1981).

C. misgurnus Wulfert, 1937

Loc: Magela Ck floodplain near Jabiluka, N.T.; 15.iv.1980.
Lit: Koste (1981).

- C. megalcephala* (Glascott), 1893
 Loc: Wentworth Falls, N.S.W.; 22.xi.1953.
 Lit: Berzins (1982).
- C. myersi* Wiszniewski, 1934
 Loc: Scrubby Ck, Whittlesea, Vic.; 30.v.1955.
 Lit: Berzins (1982).
- C. nana* Myers, 1924
 Loc: Creswick Ck, Clunes, Vic.; 11.iv.1953.
 Lit: Berzins (1982).
- C. parasitica* (Jennings), 1894
 Loc: Diggers Ck, Mt Kosciusko, N.S.W.; 11.iv.1961.
 Lit: Berzins (1982).
- C. sterea* (Gosse), 1887
 Loc: Magela Ck floodplain near Jabiluka, N.T.; 15.iv.1980.
 Lit: Koste (1981).
- C. untilloides* Hauer, 1935
 Loc: Bromfield Swamp, Qld; viii.1978.
 Lit: Green (1981).
- Family Trichocercidae Remane, 1933
- Trichocerca bidens* (Lucks), 1912
 Loc: Creswick Ck, Clunes, 11.iv.1953; L. Catani, Mt Buffalo, 10.xii.1962; Yarra R., Warburton, Vic.; 19.iii.1976.
 Lit: Berzins (1982).
- T. eudonta* (Hauer), 1938
 Loc: Moorabool R., Ballan, Vic.; 9.vii.1954.
 Lit: Berzins (1982). (=*T. myersi* Hauer, 1939).
- T. fusciformis* Levander, 1894
 Loc: Magela Ck floodplain near Jabiluka, N.T.; 15.iv.1980.
 Lit: Koste (1981).
- T. gracilis* (Tessin), 1890
 Loc: Solomon Dam, Qld. Undated.
 Coll: P. Hawkins.
- T. iernis* (Gosse), 1887
 Loc: Yarra R., Warburton, Vic.; 14, 19.iii.1976.
 Lit: Berzins (1982).
- T. inermis* (Linder), 1904
 Loc: Sheepwash Billabong, Yea, Vic.; 8.v.1982.
 Coll: R. J. Shiel.
- T. insulana* Hauer, 1937
 Loc: Magela Ck floodplain near Jabiluka, N.T.; 15.iv.1980.
 Lit: Koste (1981).
- T. intermedia* (Stenroos), 1898
 Loc: Bromfield Swamp, Qld; viii.1978.
 Lit: Green (1981).
- T. macera* (Gosse), 1886
 Loc: L. Catani, Mt Buffalo, Vic.; 25.ji.1955;
 Gamboola Stn Dam, Cape York, 12.vii.1983.
 Lit: Berzins (1982), Qld material coll. B. V. Timms.
- T. montana* Hauer, 1956
 Loc: Wintmurra Billabong, Magela Creek, N.T.; 15.iv.1980.
 Coll: R. D. Tait.
- T. musculus* (Hauer), 1936
 Loc: Diggers Ck, Mt Kosciusko, N.S.W., 11.iv.1961;
 Lake Grace-Meekatharra area, southwest W.A.; ix, x.1981.
 Lit: Berzins (1982), Koste et al. (1983).
- T. rattria cristata* Harring, 1913
 Loc: Sunbury, Whittlesea, Vic.; 6.v.1955, 30.iii.1961.
 Lit: Berzins (1982).
- T. rutineri* (Donner), 1953
 Loc: Dam near Chillagoe, Qld; 12.vii.1983.
 Coll: B. V. Timms.
- T. sulcata* (Jennings), 1894
 Loc: Avoca R., Gowar East, Vic.; 23.iv.1953.
 Lit: Berzins (1982).
- T. uncinata* (Voigt), 1902
 Loc: Tabrabucca Ck, Barrington, N.S.W.; 12.xi.1953.
 Lit: Berzins (1982).
- T. vernalis* (Hauer), 1936
 Loc: Serpentine Ck, Bears Lagoon, Vic.; 22.iv.1953.
 Lit: Berzins (1982).
- Family Gastropodidae Remane, 1933
- Ascomorpha saltans indica* Wulfert, 1966
 Loc: L. Barraeoota, Vic., 20.i.1975.
 Lit: Berzins (1982).
- Family Synchaetidae Remane, 1933
- Synchaeta lackowitziana* Lucks, 1912
 Loc: Moorabool R., Vic.; 9.vii.1954; R. Murray, Tailem Bend, S.A.; 10.x.1983.
 Lit: Berzins (1982). S.A. material coll. R. J. Shiel.
- Polyarthra major* Burekhardt, 1900
 Loc: Coliban Res., Kyneton, 06.iii.1961; L. Catini, Mt Buffalo, 25.ii.1955.
 Lit: Berzins (1982).
- P. minor* Voigt, 1904
 Loc: Magela Ck floodplain near Jabiluka, N.T.; 15.iv.1980.
 Lit: Koste (1981).
- Family Asplanchnidae Harring & Myers, 1926
- Asplanchna brightwelli asymmetrica* spp. nov.
 FIG. 4a, b
Material: 12 females, formalin preserved, sample #876; 9 females, sample #1005.
Iconotype: trophi, adult female, Fig. 4, sample #876, coll. 4.i.1981 P. Hawkins.
Paratypes: SAM V3945.
Type locality: Solomon Dam, Palm Island, near Townsville, Qld (18°44'S, 146°35'E).

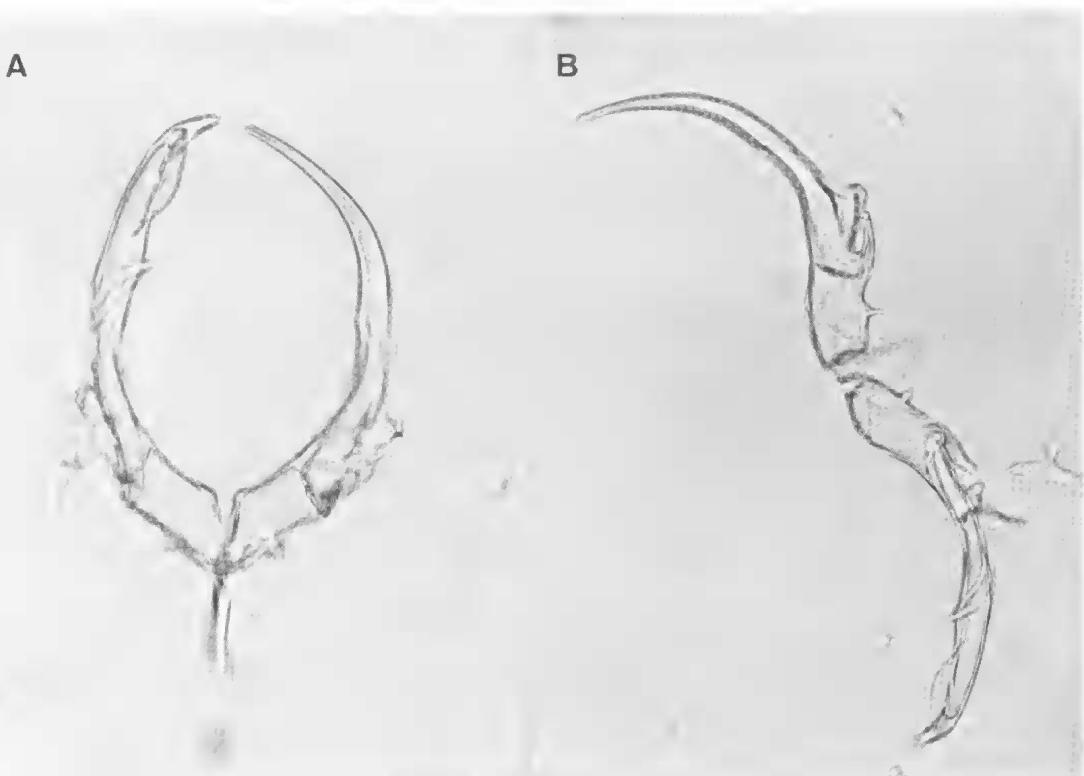


Fig. 4. *Asplanchna brightwelli asymmetrica* ssp. nov. A, trophi apical, length 130 m, B, trophi compressed under coverslip.

Description: Typical saccate illoricate form; horseshoe-shaped vitellaria belonging to the *A. brightwelli-intermedia-sieboldi* group (Koste 1978, Salt et al. 1978, Gilbert et al. 1979). Trophi (Fig. 4a, b) asymmetrical, rami (r) with short medial inner tooth only on left side, rudimentary swelling on right; right ramus smaller, more tapered and arched than that of typical form (cf. Fig. 5). In addition, the right ramus lacks a second uncus (U_2) and a lamella (la) before the ramipoint (rp).

Measurements: Comparative measurements/features of *A. typ.* are given in parentheses after those of the n. ssp.: Trophi length: 130 μm (104-156); apophysis (Fig. 4; ap, sap): equal (equal); fulcrum (f): equal (equal); inner marginal teeth: 1 small on left only (2 small symmetrical); lamella before ramipoints (la): left only (2 symmetrical); rami (r): conspicuously asymmetrical (symmetrical); uncus (U_1): equal (equal); uncus (U_2): left only (2 symmetrical); subterminal ramus tooth: equal (left only).

Discussion: It was not possible in the preserved material to count the nuclear number of gastric- and yolk glands, which are used additionally to verify *Asplanchna* taxa, however the features of the

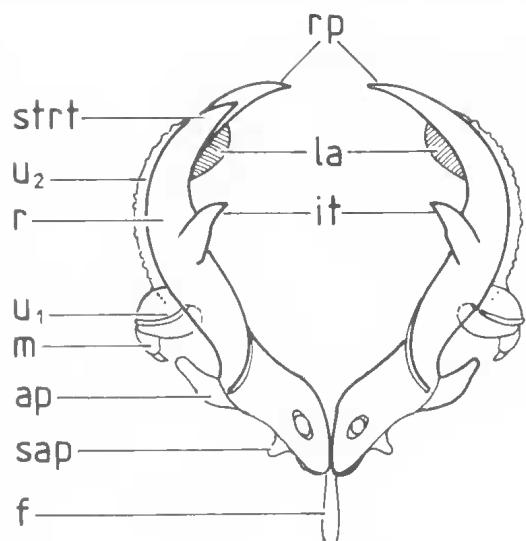


Fig. 5. Trophi of *Asplanchna brightwelli* (Gosse) (ap = apophysis on the bulla of the ramus; f = fulcrum; it = inner teeth protruding from rami inner margin; la = lamella behind ramal points; m = manubrium; r = ramus; rp = ramipoints; sap = subapophysis; strt = second rami tooth; u₁ = first uncus; u₂ = second uncus).

characteristic asymmetrical trophi in our opinion distinctly separate this taxon from *A. brightwelli* (Gosse), which it most resembles.

Asplanchna herricki De Guerne, 1888

Loc: Albert Park, Vic.

Lit: Evans (1951).

Family Dicranophoridae Remane, 1933

Alberta naidis Bousfield, 1886

Loc: Magela Ck floodplain near Jabiluka, N.T.; 15.iv.1980.

Lit: Koste (1981).

Aspelta aper (Harring), 1913

Loc: Yarra R., Vic.; 14.iii.1976.

Lit: Berzins (1982).

A. circinata (Gosse), 1886

Loc: Plenty R. Morang S., Vic.; 30.v.1954.

Lit: Berzins (1982).

A. neboissi Berzins, 1982

Loc: Yarra R. near Ivanhoe, Vic.; 14.iii.1976.

Lit: Berzins (1982).

Balatroides calvus Claparede, 1867

Loc: Winninrra Billabong, Magela Ck, N.T.; 15.iv.1980.

Lit: Koste (1981).

Dicranophorus epicharis Harring & Myers, 1928

Loc: Magela Ck floodplain near Jabiluka, N.T.; 15.iv.1980.

Lit: Koste (1981).

D. halbachi Koste, 1981

Loc: Winninrra Billabong, Magela Ck, N.T.; 15.iv.1980.

Lit: Koste (1981).

D. hercules Wisniewski, 1932

Loc: Magela Ck floodplain near Jabiluka, N.T.; 15.iv.1980.

Lit: Koste (1981).

D. robustus Harring & Myers, 1928

Loc: Norseman-Kalgoorlie area, southwest W.A.; v.1981.

Lit: Koste et al. (1983).

Encentrum unium Berzins, 1982

Loc: Bombala, N.S.W. In mould on a eucalyptus stump, 28.xii.1949.

Lit: Berzins (1982). Doubtful species on the basis of poor figures.

E. prosdendrus Berzins, 1982

Loc: Bombala, N.S.W. In mould on a eucalyptus stump, 28.xii.1949.

Lit: Berzins (1982). As above, figures are inadequate for a new species' description. Doubtful record.

Wierzejskiella veloy (Wisniewski), 1932

Loc: Yarriup Swanup, W.A.; 8.v.1981.

Lit: Koste et al. (1983).

Family Testudinellidae Bartos, 1959

Pompholyx tubulosa Berzins, 1982

Loc: L. Purumbete, Vic.; 29.vii.1953.

Lit: Berzins (1982). Poorly figured, ?formalin artefact. = *P. complanata* Gosse.

Testudinella greeni Koste, 1981

Loc: Leichhardt Billabong, Magela Ck, N.T.; 15.iv.1980.

Lit: Koste (1981).

Testudinella husseyi sp. nov.

FIG. 6:1a, b

Materiale: 13 formalin preserved females, sample #998.

Holotype: 1 adult female, sample #998, coll. 8.vii.1983 B. V. Timms, SAM V3946.

Paratypes: SAM V3947.

Type locality: Dune lake near Cooktown, Cape York, North Qld (15°28'S, 145°15'E).

Description: Shape of lorica oval; anterior margin with five tooth-shaped relatively long, keeled projections, two on either side of a median shorter tooth. In contrast, *T. patina patina* (Hermann), 1783 (see Fig. 6:2) has only a soft rounded projection. The new sp. has at the anterior ventral lorica margin a median, relatively broad notch between two short keels, which is unknown in related species.

Measurements: Lorica length 140-150 μ m; lorica width 112 μ m; width of semicircular foot-opening 15-18 μ m; median notch in ventral plate 11 μ m deep.

Discussion: The morphological group *T. patina-ohlei-mucronata* (after Koste 1978) have variable short tongues at the anterior dorsal margin of the lorica. The new species most resembles *T. ohlei*, but differs in the form of the dorsal and ventral anterior lorica margin. *T. ohlei* Koste has only three more rounded (tongue-shaped) elongations of the dorsal anterior margin [see Koste 1978a, b, cf. also *T. patina trilobata* Anderson & Shephard and *T. koster* De Ridder (De Ridder 1983)].

Etymology: The new species is named after Charles G. Hussey, of the British Museum (Natural History), in recognition of his work on the Rotifera of the U.K.

T. iuncta Berzins, 1982

Loc: Creswick Ck, Clunes, Vic.; 11.iv.1953.

Lit: Berzins (1982). Not distinguishable from *T. amphora* Hauer on the basis of the figures and regarded here as synonymous.

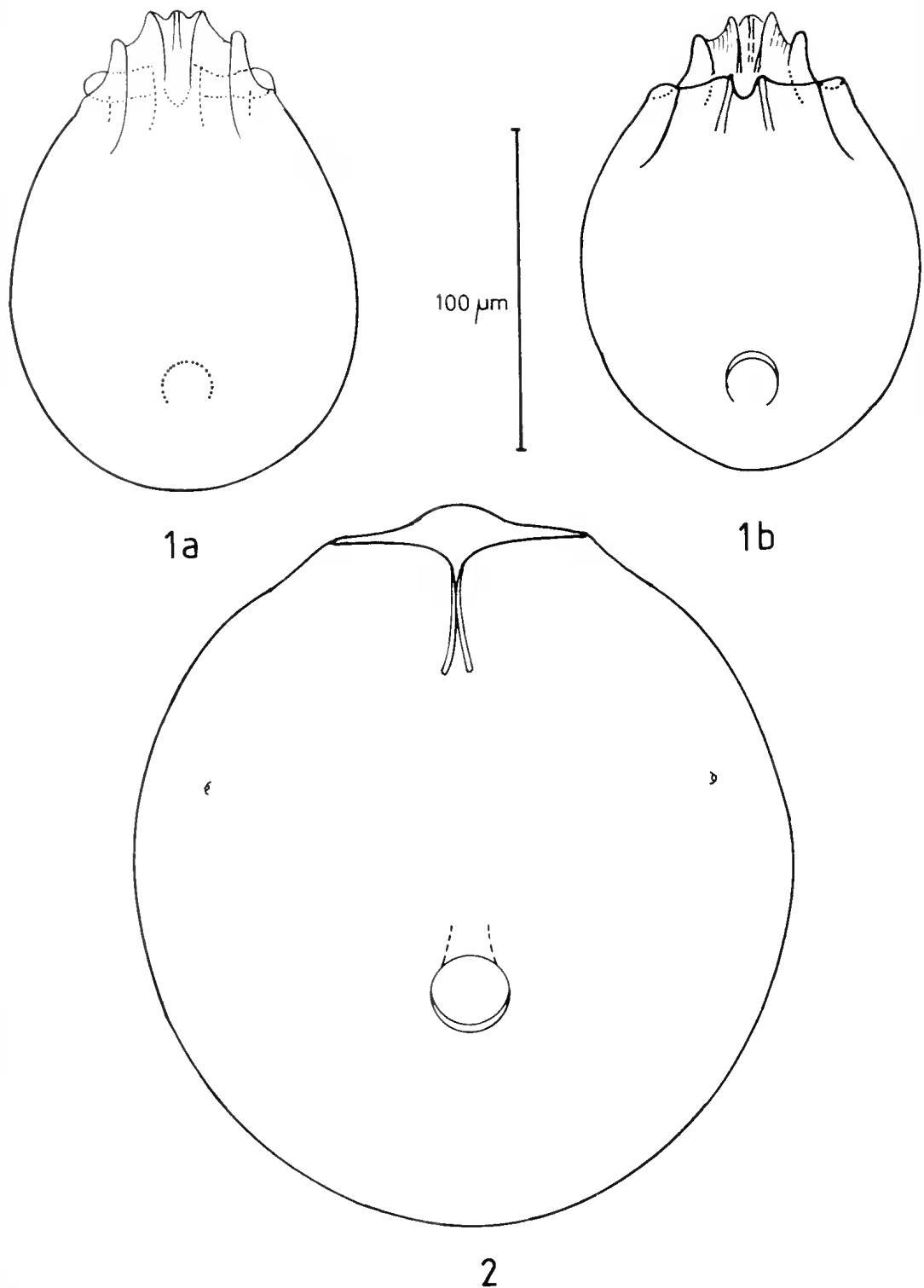


Fig. 6:1 *Testudinella husseyi* sp. nov. a, dorsal, b, ventral.

6:2 *Testudinella patina* (Hermann) from Tasmania, length of lorica 245 µm, width 216 µm, ventral view.

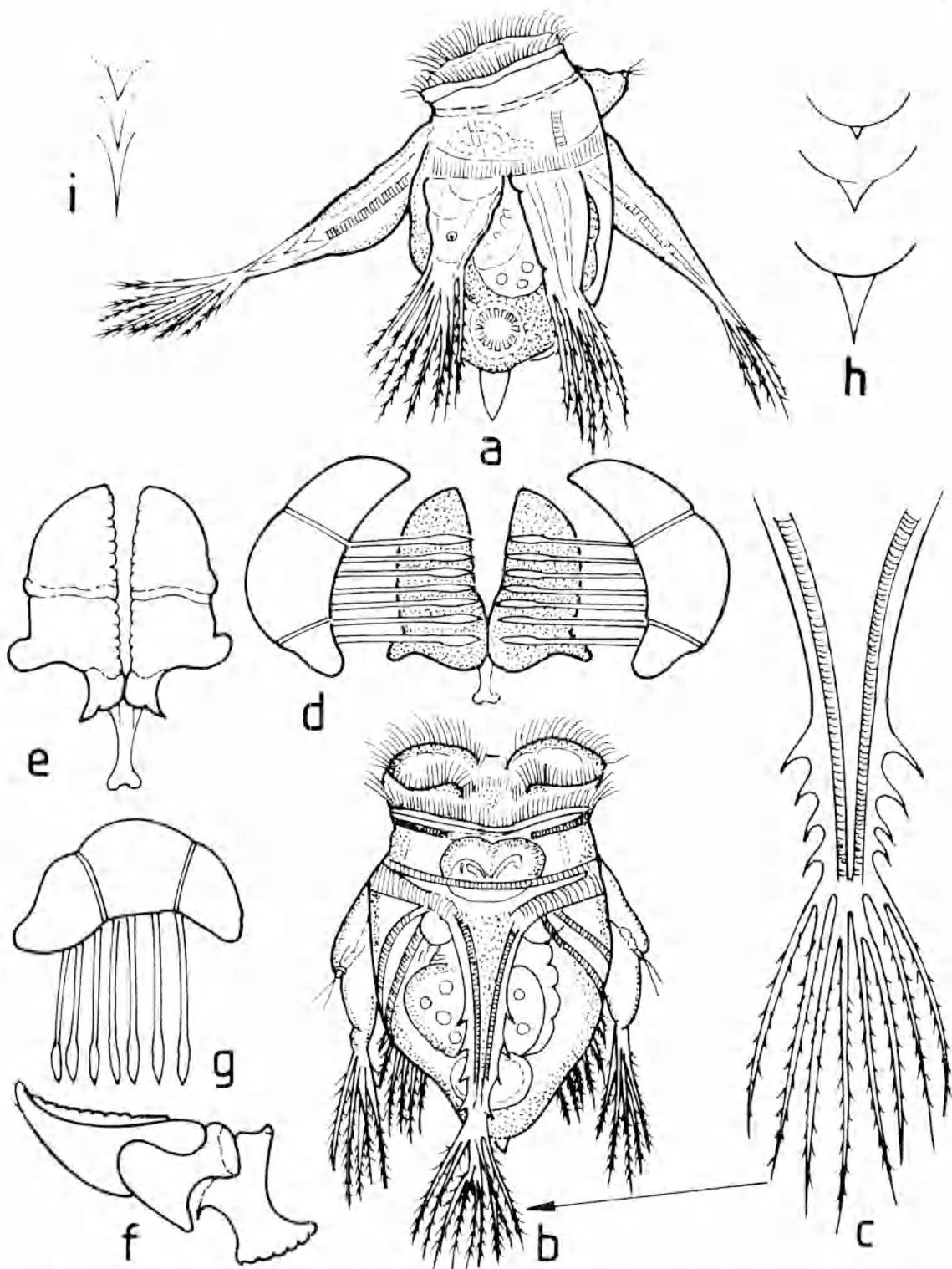


Fig. 7. *Hexarthryx oxyuris* (Sernov) a, lateral, b, ventral, c, ventral armlike appendage, d, trophi apical, e, rami and fularum, f, rami and fularum lateral, g, manubrium and tincus teeth, h, caudal projections of *H. oxyuris* from Tasmania, i, caudal projections of *H. barracootica* Berzins, 1982. a-d from Tasmanian population, e-f from W.A. population.

T. neboissi Berzins, 1982

Loc: Creswick Ck, Clunes, Vic.; 11.iv.1953.

Lit: Berzins (1982). Inadequately figured. Resembles *T. emarginula* (Stenoos) and must be considered a doubtful record.*T. patina intermedia* (Anderson), 1889

Loc: L. Barracoota, Vic.; 20.i.1975.

Lit: Berzins (1982).

T. semiiparva Hauer, 1938

Loc: Magela Ck floodplain near Jabiluka, N.T.; 15.iv.1980.

Lit: Koste (1981).

T. vidzeutensis Berzins, 1943

Loc: Creswick Ck, Clunes, Vic.; 11.iv.1953.

Lit: Berzins (1982).

Family Flosculariidae Harring, 1913

Octotrocha speciosa Thorpe, 1893Loc: Buffalo Billabong, Magela Ck, N.T.; 8.xii.1980.
Lit: Tait *et al.* (1984).*Sintantherina ariprepes* Edmondson, 1939Loc: Island billabong, Magela Ck., N.T.; 15.iv.1980.
Coll: R. D. Tait.

Family Hexarthridae Bartos, 1959

Populations of a species of *Hexarthra* found in W.A. (#788) and Tasmania (#1146) were determined to be:*H. oxyuris* Sernov, 1903

FIG. 7a-i.

Syn: *Hexarthra fennica* var. *oxyuris* (Sernov), 1903

Loc: L. Barracoota, Vic.; 20.i.1975; Norseman-Albany area, southwest W.A., x.1981; Farm dam 8 km east of St Helens, Tas.; 24.iv.1984; peaty, acid water, 14°C

Lit: Berzins (1982), W.A. material coll. M. A. Brock, Tas. material coll. R. J. Shiel.

Regarded as a variety of *H. fennica* (Levander), 1892 by Hauer (1941), this rotifer is characterized by intra-population variability in caudal spine

development and uncini teeth number. The only difference between *H. fennica* and *H. oxyuris* is in the caudal armature. The caudal spine may be absent, as in *H. fennica*, or varying between individuals (both Tas. and W.A. populations) as in Fig. 7h (cf. Fig. 7i for a population described as *H. barracootica* Berzins, 1982). Most of our specimens had 7/7 uncini teeth (cf. Fig. 6d, g), however some had 6/7, 7/8. Koste (1977) describes the variability: 7/7, 8/7, 7/8, 6/6, 6/7. Therefore, *H. barracootica*, which was described by Berzins (1982) as "very like *H. oxyuris* . . . but trophi with only 6/6 teeth" apparently is a synonym of *H. oxyuris*. Further, the ventral armlike appendages of both taxa have the same number of bristles (8) (Fig. 7e, cf. Berzins 1982 Fig. 60a)

Family Collothecidae Bartos, 1959

Collotheca tenuilobata (Anderson), 1889Loc: L. Catani, Mt Buffalo, Vic.; 25.ii.1955.
Lit: Berzins (1982).

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